AI-6820/AI-6820HD

2D Scanner

User Guide

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Regulatory Compliance

FEDERAL COMMUNICATIONS COMMISSION INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates and uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna.
-Increase the separation between the equipment and receiver.
-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-Consult the dealer or an experienced radio/ TV technician for help.

CAUTION:

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

RF exposure warning

The equipment complies with FCC RF exposure limits set forth for an uncontrolled environment.
The equipment must not be co-located or operating in conjunction with any other antenna or transmitter.

RF EXPOSURE WARNING:

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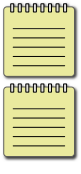


Note All brands and trademarks shall belong to their respective owner.

Note Specification is subject to changes without notice.

Contents

1 Introduction

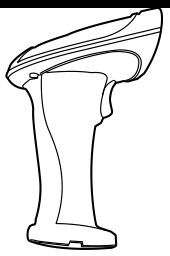
AI-6820/AI-6820HD is a 2D scanner that can read bar codes on objects or on screens. The high performance scanning engine delivers high speed and high readability, making it an ideal scanning solution for business.

- **High decoding performance** Fast and easy scan for 1D and 2D bar codes.
- **Water resistant and dust-tight** With the IP65 rating, your scanner can be used in various environment without being damaged by water and dust.
- **High optical resolution** Your scanner reads high density bar codes up to 4 mil.
- **Distortion processing** Even if your bar code is distorted, AI-6820/AI-6820HD still recognizes it.

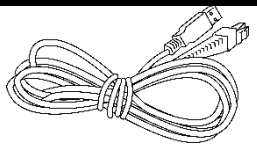
1.1 Unpacking

Make sure all following items are included in your package.

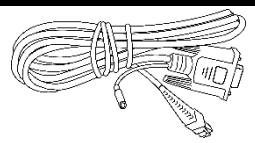
- **AI-6820/AI-6820HD**

Scanner	Quick Start Guide
	

USB Cable **or** **RS-232 Cable**

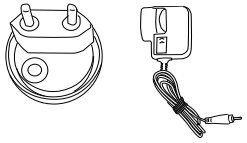


USB to RJ45



RS-232 to RJ45

Plug and Power Supply



The power supply is the optional accessory for RS-232 packs.

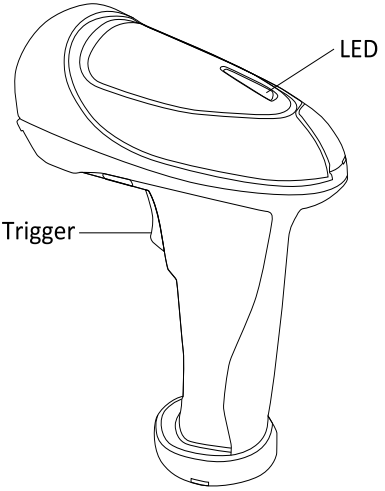
When you receive your scanner, open the package immediately and inspect for shipping damage. If you discover any damage, contact the shipping company and file a claim. Argox is not responsible for any damage incurred during shipping. Save all package materials for the shipping company to inspect.

Note If any item is missing, please contact your local dealer.

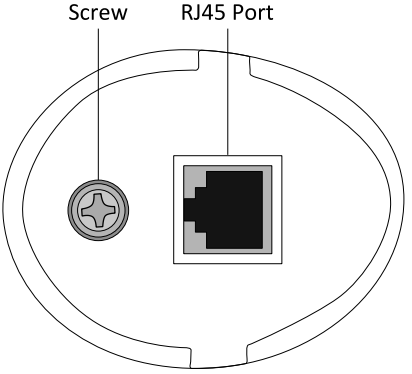
1.2 Understand your scanner

1.2.1 Scanner

- **Perspective**



- **Bottom**



1.3 Indicators

1.3.1 Status lights

Status lights (LED) are helpful for checking your scanner's status. For AI-6820/AI-6820HD, your scanner has one LED indicator working in only green color. The table below shows the LED behavior and the status it indicates.

Status	Scanner LED
Scanner connected	Flash **green** once
Good Scan	Flash **green** once
Firmware Update	Flash **green** fast

1.3.2 Status sound

In addition to status lights, your scanner make sounds to indicate the status it is in

Status	Scanner Sound
Scanner connected	A long beep
Good Scan	A short beep
Programming	Two short beeps

1.3.3 Vibration

Your scanner vibrates in certain status.

Status	Scanner
Power On	Vibrate
Good Scan	Vibrate

2 Get started

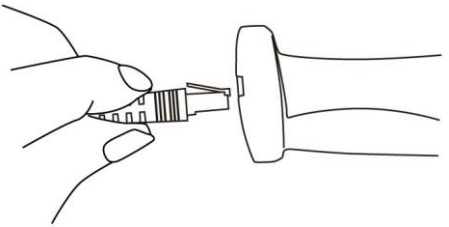
This chapter provides information about how to install, connect and use your scanner to do your work.

2.1 Installation

This section describes how to set up your scanner.

2.1.1 Set up your scanner

1. Plug the RJ45 connector into your scanner's RJ45 port, until you hear a click



2. Connect the USB or the RS-232 connector to your computer.

   Note If you've purchased the power supply, connect it to the RS-232 cable and the wall outlet.

3. Turn on your computer. It detects your scanner automatically.
4. To test your scanner, start a text processing program like Notepad or

Word. Scan a bar code and see if the data can be sent to your computer. If it's successful, you'll hear a beep and the bar code data shows in the program.

2.1.2 How to scan

AI-6820/AI-6820HD emits a cross pattern when it is scanning. Any bar code in the range of the cross could be read. Typically, the bar code closest to the center will be read first, but if the quality of this bar code is poor, your scanner might read other bar code first.

If you want to scan a bar code in a small area that contains multiple bar codes, it would be better to cover other bar codes in the range of the cross, in case your scanner scans the bar code you don't need.

2.1.3 Work with the ASCII table

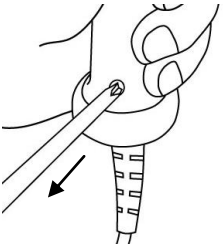
Sometimes, you might need to send some control characters that can’t be typed, or enter characters without a keyboard. You can do it using ASCII codes.

In *Appendix B*, you'll find the ASCII table. Both column and row numbers are hexadecimal. The ASCII code of a character is the combination of a column and a row number, where the column comes first. For example, the ASCII code of BEL is "07" and the number sign (#) is "23." You can use the bar codes in *Appendix D* to scan ASCII codes.

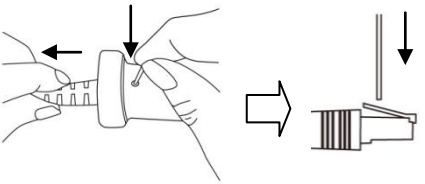
2.2 Unplug cable

Follow the step to unplug cable

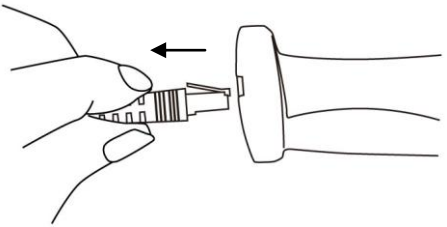
1. Loose and remove a screw as below.



2. Use a pin to insert screw hole. Press latch and pull RJ45 connector out.



3. Unplug cable



3 Controls and settings

Customize your scanner to work efficiently. AI-6820/AI-6820HD offers many features to match your preferences. This chapter provides information about how to change controls and settings of your scanner.

■ User's Default Setting

After setting your device, you can save your setting as a User's default. If you reset your scanner to factory default, you can still load your setting in this function.

Option	Description	Bar Code
save	Save all setting as default	
load	Restore User's default	

3.1 Data transmission

You might want to display additional information in bar codes for your system, so you can track your products or spot problems. This section describes how to manage the data transmission of your bar code.

3.1.1 Character length

It shows the number of the character length at the beginning of a bar code. For example, if your bar code is “Argox,” the result is “0005Argox.” The maximum character length of the bar code varies between bar code types. If the number is smaller than 1000, it pads the number with leading zeros.

(*) Default

Option	Description	Bar Code
On	Show the number of the character length at the beginning of a bar code.	
*Off	Turn off this feature.	

3.1.2 Name of the bar code type

It shows the name of a bar code type at the beginning of a bar code. For example, if your bar code type is Code 128, and your bar code

is “Argox,” the result is “(Code 128)Argox.”

(*) Default

Option	Description	Bar Code
On	Show the name of a bar code type at the beginning of a bar code.	
*Off	Turn off this feature.	

3.1.3 AIM symbology ID

It shows the AIM symbology ID at the beginning of a bar code.

(*) Default

Option	Description	Bar Code
*Off	Turn off this feature.	
AIM	Show the AIM symbology ID at the beginning of a bar code.	

3.1.4 Prefix and suffix

You can add a character at the beginning or the end of a bar code. To add a character, do this:

1. Scan the prefix or the suffix bar code.
2. Scan the hexadecimal bar codes in *Appendix D* to enter the ASCII codes that corresponding to the character you want to add. For more information about ASCII codes, see *Appendix B*.
3. Scan the **Save** bar code in *Appendix D*.

- Prefix
  Add one character at the beginning of your bar code.

Option	Description	Bar Code
00-FF	Prefix length: one character Default: 0x00	

- Suffix 1
  Add one character at the end of your bar code.

Option	Description	Bar Code
00-FF	Suffix length: one character Default: 0x0D	

- Suffix 2
  Add one character at the end of Suffix 1.

Option	Description	Bar Code

Option	Description	Bar Code
00-FF	Suffix length: one character Default: 0x0A	

3.2 Volume and vibration

When you use your scanner, you might want to adjust its volume or vibration to adapt to your workplace. This section describes how to use them.

3.2.1 Good scan beep duration

You can decide how long your scanner beeps after it gets a good scan. The duration is from 0.1 to 0.9 second.

(*) Default

Option	Description	Bar Code
*1	0.1 second (MIN)	
2	0.2 second	
3	0.3 second	

Option	Description	Bar Code
4	0.4 second	
5	0.5 second	
6	0.6 second	
7	0.7 second	
8	0.8 second	
9	0.9 second (MAX)	

3.2.2 Scan volume

You can adjust the beep volume of your scanner.

(*) Default

Option	Description	Bar Code
0	Mute	
1	Level 1 (MIN)	
2	Level 2	
3	Level 3	
4	Level 4	
5	Level 5	
6	Level 6	
*7	Level 7 (MAX)	

3.2.3 Vibration

Vibration provides two modes. You can choose one of them or turn off vibration.

(*) Default

Option	Description	Bar Code
0	Turn off vibration.	
1	Vibrate after a scan.	

3.2.4 Power on alert

You can decide whether your scanner beeps when the power is on.

(*) Default

Option	Description	Bar Code
*On	Your scanner beeps when the power is on.	
Off	Your scanner doesn't beep when the power is on.	

3.3 Operating mode

AI6820 offers operating modes. This section

describes how to use these mode.

3.3.1 Auto-sensing mode

It automatically detects and decodes bar codes in your scanner's field of view. You can turn on this mode when you want to decode bar codes without pulling the trigger.

(*) Default

Option	Description	Bar Code
On	Auto-sensing mode on.	
*Off	Auto-sensing mode off.	

3.4 Interface selection

AI-6820/AI-6820HD supports RS-232, USB HID and virtual COM. When it detects USB, it selects HID as your scanner's interface.

(*) Default

Option	Description	Bar Code
1	RS-232	
3	USB HID	
*4	Auto	
5	Virtual COM	

3.4.1 HID setting

The following bar codes are HID settings that help you optimize your data input.

Country

You can use it to change your keyboard layout, so your scanner can scan bar codes of different languages. This setting is available only when you use USB HID as your

interface.

When you set a different country keyboard, the decoder automatically resets and you'll hear the startup sound.

Option	Description	Bar Code
0	USA	
1	Belgium	
2	Denmark	
3	France	
4	Germany	
5	Italy	
6	Portugal	

Option	Description	Bar Code
7	Spain	
8	Sweden	
9	Switzerland	
10	United Kingdom	
11	Latin America	
12	Japan	
13	BiG5	
14	UTF-8	

Caps Lock

It determines whether the state of the Caps Lock key affects the output of bar codes.

(*) Default

Option	Description	Bar Code
On	The Caps Lock key affects the output of bar codes.	
*Off	The Caps Lock key doesn't affect the output of bar codes.	

Function key

It maps function keys to ASCII codes, so you can scan bar codes in place of the function key input. For example, if you scan the numeric bar code "1" and then "2," your scanner will send the specific character to your computer as though you press F2. The code mapping range is from 01 to 1F. For more information about ASCII codes, see ASCII table in *Appendix B*.

(*) Default

Option	Description	Bar Code
*On	Simulate the function key input while you scan the bar codes that	

Option	Description	Bar Code
	correspond to the ASCII code of a function key.	
Off	Turn off function key simulation.	

Alphanumeric keys

There are three key modes for data input. When you scan bar codes, your scanner will send bar code data as though you press keys on a keyboard in the selected mode to enter data.

Option	Description	Bar Code
Alphanumeric Keys	Alphanumeric keys are at the center of the keyboard, including alphabet keys and the numeric keys above them.	
Numeric Keypad	The keypad is located to the rightmost of a keyboard. You need to select this mode if your program only accepts numerals.	

Option	Description	Bar Code
Alt+Numeric Keypad	Enter special character by pressing "Alt+number." For example, "Alt+128" is the Euro sign (€). This option is only available on Windows.	

3.4.2 RS-232 settings

RS-232 settings provide options that can be used to control data flow. When you connect with RS232 cable, you have to use power supply.

Flow control

Flow control determines how your computer controls their communication.

(*) Default

Option	Description	Bar Code
*None	Your computer only uses TxD and RxD signals for communication. No hardware or software flow control is used.	

Option	Description	Bar Code
RTS/CTS	It is hardware flow control. If your scanner is ready to send bar code data to your computer, it sends an RTS signal, and waits to receive a CTS signal from your computer. If your scanner doesn't receive a CTS, you'll hear an error beep from it.	
Xon/Xoff	It is software flow control. When your computer is unable to receive data, it sends an Xoff signal to notify your scanner to stop sending data; it sends an Xon signal when it's ready.	
ACK/NAK	You scanner sends data after it received an ACK signal from your computer, and will resend data if it receives an NAK signal.	

Response delay

If you use RTS/CTS or ACK/NAK for flow control, you can decide how long you wait your computer to acknowledge the data transmission.

(*) Default

Option	Description	Bar Code
0	You don't wait your computer to acknowledge the data transmission.	
*10	You wait 1 second.	
20	2 seconds	
30	3 seconds	
40	4 seconds	
50	5 seconds	

Option	Description	Bar Code
60	6 seconds	
70	7 seconds	
80	8 seconds	
90	9 seconds	

Baud

Baud is the rate of the signal transmitted per second. It ranges between 1200 and 115200. The higher the baud rate, the faster the speed.

(*) Default

Option	Bar Code	Option	Bar Code
1200		2400	
4800		9600	

Option	Bar Code	Option	Bar Code
19200		38400	
57600		*115200	

Parity check

A parity bit is added at the end of a string of data bits to check if data is correct.

(*) Default

Option	Description	Bar Code
7 data bits 1 stop bit parity even	The total number of “ones” in your data plus parity bit is an even number.	
7 data bits 1 stop bit parity odd	The total number of “ones” in your data plus parity bit is an odd number.	
7 data bits 1 stop bit parity none	No parity bit is used.	
7 data bits 2 stop bit parity even	The total number of “ones” in your data plus parity bit is an even number.	

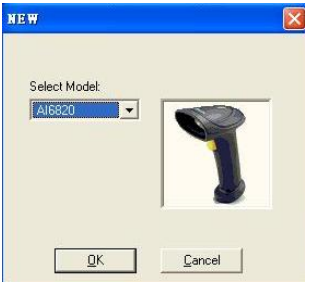
Option	Description	Bar Code
7 data bits 2 stop bit parity odd	The total number of “ones” in your data plus parity bit is an odd number.	
7 data bits 2 stop bit parity none	No parity bit is used.	
8 data bits 1 stop bit parity even	The total number of “ones” in your data plus parity bit is an even number.	
8 data bits 1 stop bit parity odd	The total number of “ones” in your data plus parity bit is an odd number.	
*8 data bits 1 stop bit parity None	No parity bit is used.	

3.5 Update firmware

Updating firmware improves functionalities and performance for your scanner. For AI-6820/AI-6820HD, take the following step by Start Scan Utility to update firmware.

1. Start Scan Utility.
2. On the **File** menu, click **New**.

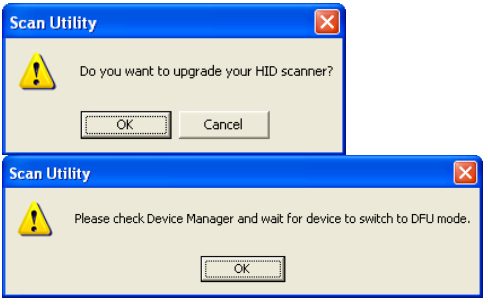
3. In the **NEW** dialog box, select **AI6820** from the **Select Model** list, and click **OK**.



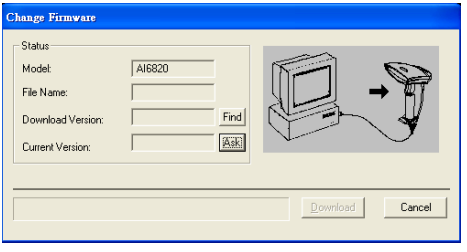
4. In the **Scan Utility** dialog box, click **No**.

5. On the **Tool** menu, click **Download Firmware** > **Download All (Scanner)**

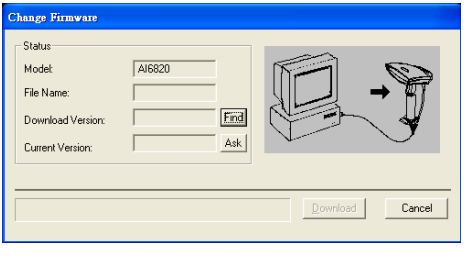
6. Scan Utility will ask if you want to upgrade your scanner, click **OK**. In the next dialog box, click **OK**. Then, you need to wait 7 seconds for the system to switch your scanner to the DFU mode.



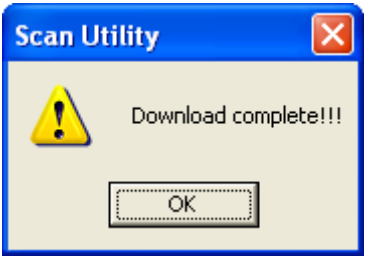
7. In the **Change Firmware** dialog box, click **Ask** to get the current firmware version.



8. Click **Find** to load the firmware file. The firmware version in this file needs to be different from the current firmware version. After loading the file, click **Download** to update the firmware.



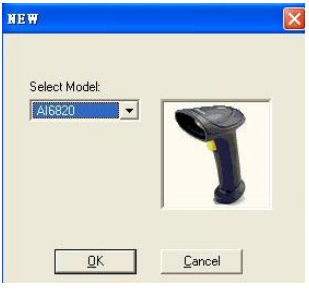
9. After the update is completed, click **OK**.



- RS-232 connection

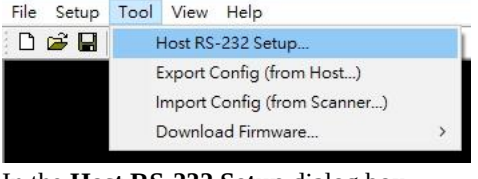
1. Start Scan Utility.
2. On the **File** menu, click **New**.

3. In the **NEW** dialog box, select **AI-6820** from the **Select Model** list, and click **OK**.

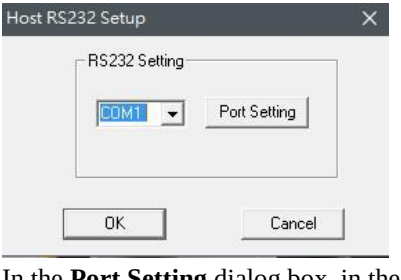


4. In the **Scan Utility** dialog box, click **No**.

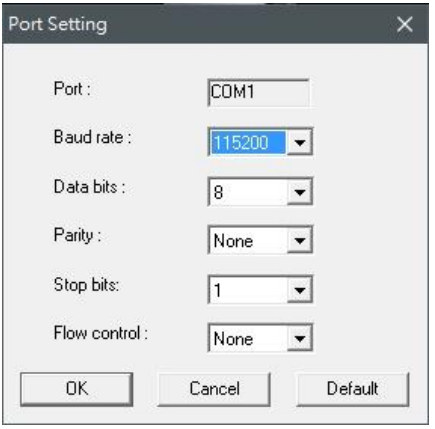
5. On the **Tool** menu, click **Host RS-232 Setup**.



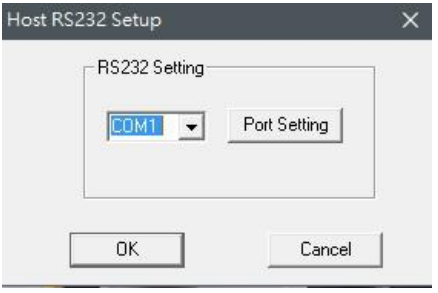
6. In the **Host RS-232 Setup** dialog box, select the COM port your scanner is using and click **Port Setting**.



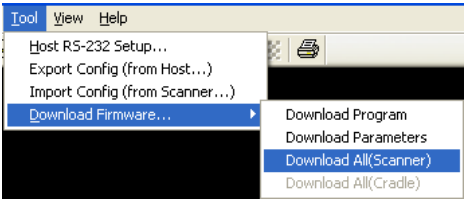
7. In the **Port Setting** dialog box, in the **Baud rate** list, select **115200** and click **OK**.



8. In the **Host RS-232 Setup** dialog box, click **OK**.

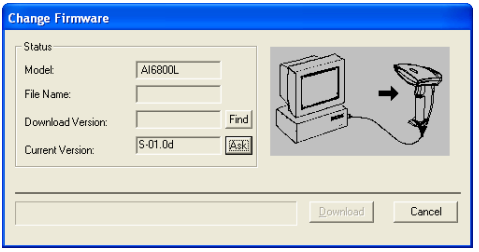


9. On the **Tool** menu, click **Download Firmware** > **Download All (Scanner)**.

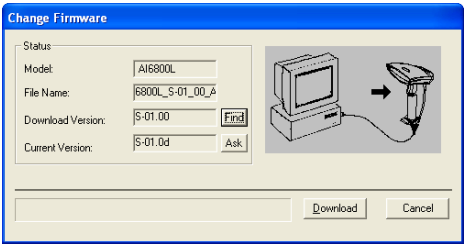


10. In the **Change Firmware** dialog box,

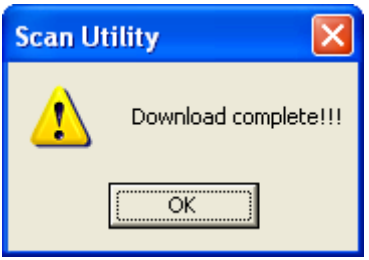
click **Ask** to get the current firmware version of your scanner.



11. Click **Find** to load the firmware file. The firmware version in this file needs to be different from the current firmware version of your scanner. After loading the file, click **Download** to update the firmware.



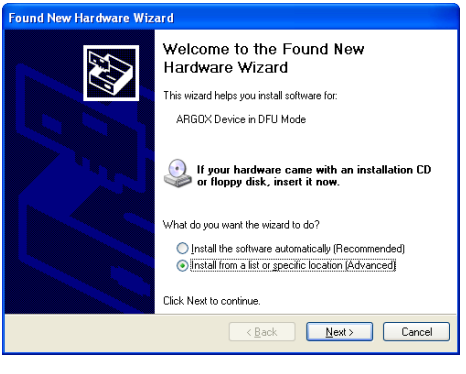
12. After the update is completed, click **OK**.



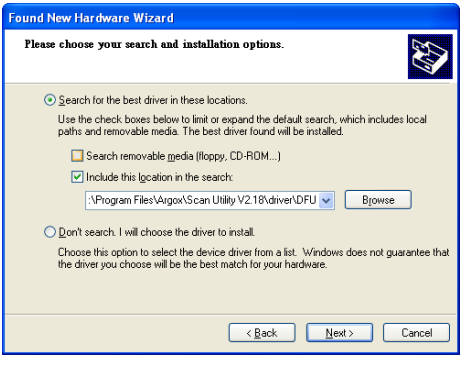
Install driver

If you're using the USB cable to connect your scanner and your operating system is Windows XP, the system may ask you to install the driver for AI-6820/AI-6820HD during the firmware updating process. Take the following steps to install it.

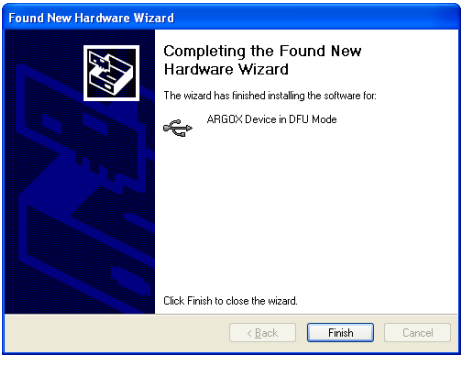
1. In the **Found New Hardware Wizard** dialog box, click **Install from a list or specific location (Advanced)**, and click **Next**.



2. Select the **Include this location in the search** check box, and click **Browse**. The default path of driver of AI-6820/AI-6820HD is C:\Program Files\Argox\(Your Scan Utility version)\driver\DFU. After setting the path, click **Next**.



3. The system starts to install the driver. After it is completed, click **Finish**.



3.6 Miscellaneous

This section describes settings that give you finer control over your scanner.

3.6.1 Fill-in light intensity

When you turn on the aiming pattern, you'll notice that the pattern is encompassed by the fill-in light, which helps your scanner see bar codes clearly.

You can adjust the intensity of the fill-in light if you feel it is too bright, but it affects the "sight" of your scanner. The lower the intensity, the harder your scanner sees bar codes.

(*) Default

Option	Description	Bar Code
02	Low	
05	Medium	
*10	High	

3.6.2 Mobile phone mode

It improves reading performance of your scanner with target bar codes displayed on mobile phones and other electronic displays.

(*) Default

Option	Description	Bar Code
On	Turn on mobile phone mode.	
*Off	Turn off mobile phone mode.	

3.6.3 Aiming pattern

By default, your scanner projects the aiming pattern during the scan. You can turn it off.

(*) Default

Option	Description	Bar Code
*On	Turn on the aiming pattern.	
Off	Turn off the aiming pattern.	

3.6.4 Align mode

Decode only the bar codes aligned under the center of the aiming pattern.

(*) Default

Option	Description	Bar Code
On	Turn on the Align mode.	
*Off	Turn off the Align mode.	

3.6.5 Edit GS1 character setting

- Setting Character: If you want to set by yourself, scan Setting Character then scan 2 characters ASCII.
- Quick set: Quick setting Scanner to ASCII:0x7C. It will display “I” If there has <GS> code.
- Restore: Restore scanner default setting to ASCII:0x1D

Option	Description	Bar Code
Setting Character	Select 2 characters	
Quick set	Display hidden <GS> to"|"	
Restore	Restore to GS1 setting	

Note Only support in GS1_128, databar, datamatrix, QR code barcode type.

3.6.6 Reset your scanner

By resetting your scanner, you can return your scanner to the state it was in when you receive it. This can help you solve some problems caused by settings changed between scans.

- Scan the bar code

Scan the following bar code to reset your scanner.

Option	Description	Bar Code

Option	Description	Bar Code
Reset scanner	Restore your scanner to factory settings.	

3.6.7 Scanner information

It displays your scanner's information on the screen.

AI6820	Model name
Ver: S-01.00	Firmware version
SN: 11111111	Serial number
Pin: 11111118	PIN code

Option	Description	Bar Code
Scanner's Information	Display your scanner's information.	

3.7 Data Magic

Data Magic offers 10 commands for you to customize text strings of bar codes. Each command can be specified in a rule. Data Magic allows up to 10 rules to be applied. With the flexibility Data Magic provides, you can define data as you want.

There are two ways to use Data Magic: scanning bar codes, or using Scan Utility. By scanning bar codes, you can quickly change the settings without using a program; by using Scan Utility, you can see the settings at a glance and change them through the easy-operated user interface. Choose the method that meets your need.

Data Magic commands

InsertF

Definition	Attributes
Insert a character or characters from the left of a text string.	■ Position: The position you want to insert the character. ■ String: The specified group.

InsertB

Definition	Attributes
Insert a character or characters from the right of a text string.	■ Position: The position you want to insert the character. ■ String: The specified group.

CutF

Definition	Attributes
Remove a character or characters from the left of a text string.	■ From: The start position of the text to be removed. ■ To: The end position of the text to be removed.

CutB

Definition	Attributes
Remove a character or characters from the right of a text string.	■ From: The start position of the text to be removed. ■ To: The end position of the text to be removed.

KeepF

Definition	Attributes

Keep a character or characters from the left of a text string.	■ From: The start position of the text to be kept. ■ To: The end position of the text to be kept.

KeepB

Definition	**Attributes**
Keep a character or characters from the right of a text string.	■ From: The start position of the text to be kept. ■ To: The end position of the text to be kept.

FindF

Definition	**Attributes**
Remove a certain length of the string from the left.	■ String: The specified group. ■ Include: Remove everything before the specified string. ■ Exclude: Remove the specified string and everything before it.

FindB

Definition	**Attributes**
Remove a certain length of the string from the right.	■ String: The specified group. ■ Include: Remove everything before the specified string. ■ Exclude: Remove the specified string and everything before it.

Replace

Definition	**Attributes**
Replace the text in the original	■ String: The text in the original text string.

text string with a different text string.	■ With String: The string that replaces the specific text.

Erase

Definition	**Attributes**
Remove the specified rule.	None.

Position Range: 0-99
Cut Range: From: 1-99, To: 1-99

Note If you use Data Magic by scanning bar codes, you don't need the Erase command.

3.7.1 Bar code scanning

Bar code scanning is a quick way to work with Data Magic. Just scan the bar codes in specific order and you can customize your string in seconds.

To use Data Magic, scan the **On** bar code:

(*) Default

Option	Description	Bar Code
On	Turn on Data Magic.	
*Off	Turn off Data Magic.	

Data format

Data Magic provides 10 rules for you to set. To set a rule, follow this data format to scan bar codes:

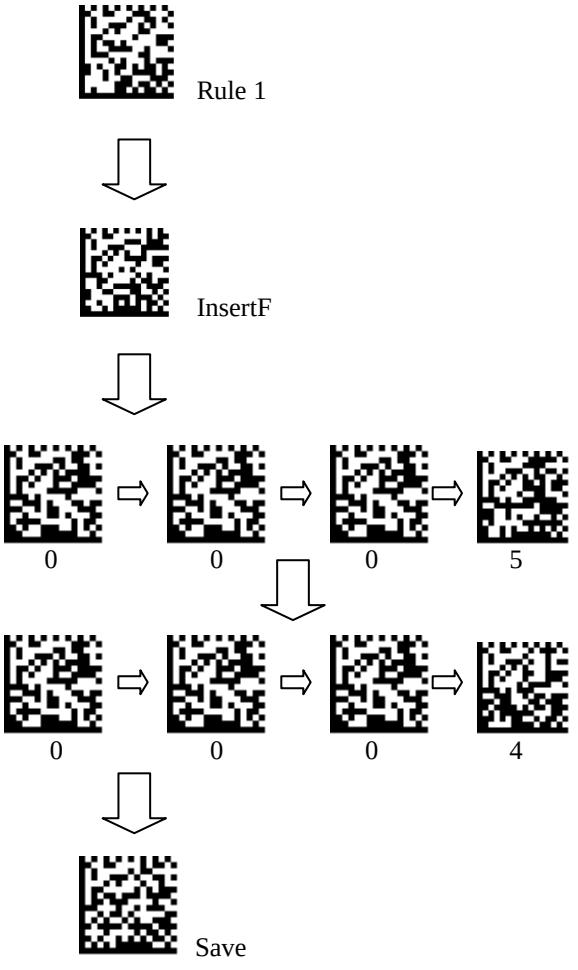
Rule + Command + Attribute 1 +

Attribute 2 + Save

Item	Description
Rule	The rule number. The lower the number, the higher the priority. The rule with the high priority will be applied first.
Command	The command you specify in the rule.
Attribute 1	The attribute varies according to the command.
Attribute 2	The attribute varies according to the command.

Command	Attribute 1	Attribute 2
InsertF	Position	String
InsertB	Position	String
CutF	From	To
CutB	From	To
KeepF	From	To
KeepB	From	To
FindF	String	Include or Exclude
FindB	String	Include or Exclude
Replace	String	With String
Erase	-	-

To set an InsertF rule with the sample data, scan the following bar codes:



Bar codes

- Rules

  To set a rule, scan one of the following bar codes.

Option	Description	Bar Code
Rule 1	Rule 1	
Rule 2	Rule 2	
Rule 3	Rule 3	
Rule 4	Rule 4	
Rule 5	Rule 5	
Rule 6	Rule 6	

Option	Description	Bar Code
Rule 7	Rule 7	
Rule 8	Rule 8	
Rule 9	Rule 9	
Rule 10	Rule 10	

- Clear rules

  To clear a rule, scan its bar code.

Option	Description	Bar Code
Rule 1	Clear Rule 1	
Rule 2	Clear Rule 2	
Rule 3	Clear Rule 3	

Option	Description	Bar Code
Rule 4	Clear Rule 4	
Rule 5	Clear Rule 5	
Rule 6	Clear Rule 6	
Rule 7	Clear Rule 7	
Rule 8	Clear Rule 8	
Rule 9	Clear Rule 9	
Rule 10	Clear Rule 10	

- Commands

  The bar codes below are Data Magic commands.

Option	Description	Bar Code
InsertF	Insert from the left of a string.	
InsertB	Insert from the right of a string.	
CutF	Remove from the left of a string.	
CutB	Remove from the right of a string.	
KeepF	Keep from the left of a string.	
KeepB	Keep from the right of a string.	
FindF	Remove a certain length of the string from the left.	
FindB	Remove a certain length of the string from the right.	

Option	Description	Bar Code
Replace	Replace the text with a different text string.	

- Strings

  To set a string:

  1. Scan a string bar code, such as **String1**.
  2. Find your characters in the ASCII table, and scan their ASCII codes using bar codes in *Appendix D*. See *Appendix B* for ASCII codes of characters.
  3. Scan the **Save** bar code in *Appendix D*.

Option	Description	Bar Code
String1	Insert String 1.	
String2	Insert String 2.	
String3	Insert String 3.	

Option	Description	Bar Code
String4	Insert String 4.	
String5	Insert String 5.	
String6	Insert String 6.	
String7	Insert String 7.	
String8	Insert String 8.	
String9	Insert String 9.	
String10	Insert String 10.	

- Clear strings

  To clear a string, scan its bar code.

Option	Description	Bar Code

Option	Description	Bar Code
String1	Clear String 1.	
String2	Clear String 2.	
String3	Clear String 3.	
String4	Clear String 4.	
String5	Clear String 5.	
String6	Clear String 6.	
String7	Clear String 7.	
String8	Clear String 8.	

Option	Description	Bar Code
String9	Clear String 9.	
String10	Clear String 10.	
Clear Strings	Clear all strings.	

- Info

  Display the current Data Magic settings.

Option	Description	Bar Code
Info	Display the current Data Magic settings.	

- Clear All

  Remove all values from Data Magic settings.(except string)

Option	Description	Bar Code
Clear All	Clear all values.(except string)	

Example

Original Text String: ARGOX89121121
Group 1: ARGOX Group 2: argox
Group 3: GOX Group 4: Tel:

InsertF

Insert Group 4 (Attr 2) into the fifth (Attr 1) position from the left side of the string.

Rule	Command	Attribute 1				Attribute 2				Save
1	InsertF	0	0	0	5	0	0	0	4	

Data: ARGOX89121121

Result: ARGOXTel:89121121

InsertB

Insert Group 4 (Attr 2) into the eighth (Attr 1) position from the right of the string.

Rule	Command	Attribute 1				Attribute 2				Save
2	InsertB	0	0	0	8	0	0	0	4	

Data: ARGOX89121121

Result: ARGOXTel:89121121

CutF

Remove first 5 characters from the left of the string.

Rule	Command	Attribute 1	Attribute 2	Save

3	CutF	0	0	0	1	0	0	0	5	

Data: ARGOX89121121

Result: 89121121

CutB

Remove first 8 characters from the right of the string.

Rule	Command	Attribute 1				Attribute 2				Save
4	CutF	0	0	0	1	0	0	0	8	

Data: ARGOX89121121

Result: ARGOX

KeepF

Keep the characters from (Attr1) to (Attr2) from the left of the string.

Rule	Command	Attribute 1				Attribute 2				Save
5	KeepF	0	0	0	3	0	0	0	8	

Data: ARGOX89121121

Result: GOX891

KeepB

Keep the characters from (Attr1) to (Attr2) from the right of the string.

Rule	Command	Attribute 1				Attribute 2				Save
6	KeepB	0	0	0	3	0	0	0	8	

Data: ARGOX8912112121

Result: 891211

FindF

Remove Group 3 (Attr 1) and everything before it from the left of the string. Attribute 2 can be “0000” or “0001.”

Rule	Command	Attribute 1				Attribute 2				Save
7	FindF	0	0	0	3	0	0	0	1	

0000: Include
Data: ARGOX89121121
Result: GOX89121121

0001: Exclude
Data: ARGOX89121121
Result: 89121121

FindB

Remove Group 3 (Attr 1) and everything before it from the right of the string. Attribute 2 can be “0000” or “0001.”

Rule	Command	Attribute 1				Attribute 2				Save
8	FindB	0	0	0	3	0	0	0	1	

0000: Include
Data: ARGOX89121121
Result: ARGOX

0001: Exclude
Data: ARGOX89121121
Result: AR

Replace

In the original string, replace the Group 1 (Attr1) with Group 4 (Attr2).

Rule	Command	Attribute 1	Attribute 2	Save

9	Replace	0	0	0	1	0	0	0	4	

Data: ARGOX89121121

Result: Tel:89121121

3.7.2 Scan Utility

Scan Utility provides a simple, clear interface that you can easily view and change Data Magic settings, and import or export the settings to your scanner. Currently, Scan Utility uses RS-232 for data transmission. If your scanner is connected using the USB cable, you need to install Virtual COM for Scan Utility for data transmission. For more information about installing Virtual COM, see *Virtual COM*.

To use Data Magic, start Scan Utility and do this:

1. On the **File** menu, click **New**.
2. In the **NEW** dialog box, select **AI-6820/AI-6820HD** from the **Select Model** list, and click **OK**.
3. In the **Scan Utility** dialog box, click **No**.
4. On the **Setup** menu, Click **Linear Barcode setup**. Select which code you want to use then enable **Data matrix** function, click **OK**.
5. On the **Setup** menu, click **Scanner Setup**, and click the **Data Magic** tab.
6. In the **Data Magic** tab, select the **Data Magic** check box.
7. Click one of the rules you want to set. For example, if you want to set **Rule 1**, select its **Enable** check box. In the command list, click the command you want, such as **InsertF**. In the **position** box, type a position number. In the **string** list, click

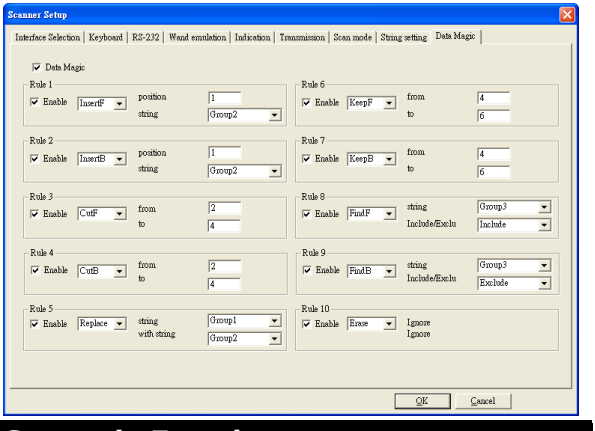
the group you want.

8. Repeat the previous step until you set all the rules you need, and click the **String** tab.
9. In the **String** tab, there are 10 string boxes: **Insert G1-G10 chars setting**. Each box corresponds to the group you've selected in the **string** list in the **Data Magic** tab. Depending on your selection, type the text you want in the specific box. For example, if you've selected **Group1**, type in the **Insert G1 chars setting** box. The string box accepts up to 12 single-byte characters. When you're done, click **OK**.
10. On the **Tool** menu, click **Export Config (from Host)**, and click **Export**. If the data is exported successfully, you'll hear a long beep.

Note The bar codes types available in Data Magic are the same as those you've turned on. For more information about how to turn on bar codes types, see *Chapter 4*.

In the **Data Magic** tab, you'll find 10 rules. Each rule can be set to one of the commands. The table below describes how to use those

commands.



Command	Example
InsertF	Position: 1 String: Group 2 Group 2: Argox Original String: 12345678 Result: 1Argox2345678
InsertB	Position: 1 String: Group 2 Group 2: Argox Original String: 12345678 Result: 1234567Argox8
CutF	From: 2 To: 4 Original String: 12345678 Result: 15678
CutB	From: 2 To: 4 Original String: 12345678 Result: 12348
Replace	String: Group1 With String: Group 2 Group 1: 456 Group 2: Argox Original String: 12345678

Command	Example
	Result: 123Argox78
KeepF	From: 2 To: 4 Original String: 12345678 Result: 234
KeepB	From: 2 To: 4 Original String: 12345678 Result: 567
FindF	String: Group 3 Group 3: 45 Original String: 12345678 Include/Exclu: Include ■ Result: 45678 Include/Exclu: Exclude ■ Result: 678
FindB	String: Group 3 Group 4: 45 Original String: 12345678 Include/Exclu: Include ■ Result: 12345 Include/Exclu: Exclude ■ Result: 123
Erase	In Rule 10, In the command list, click **Erase**, and Rule 10 will be removed. You can also clear the **Enable** check box to remove the rule.

Virtual COM

You can configure Virtual COM to transmit data to a computer via a virtual COM port. After installing Virtual COM, your scanner will be assigned a virtual COM port, which you can use to receive or send data.

To configure Virtual COM on Windows XP and set up a virtual COM port in Scan Utility:

1. Connect your scanner to your computer.
2. Use the bar code in *Interface Selection* to switch the interface to **Virtual COM**. If the interface is set successful, you'll hear a long beep, and **Found New Hardware Wizard** will appear on screen.
3. In the **Found New Hardware Wizard** dialog box, click **Install from a list or specific location (Advanced)**, and click **Next**.
4. Click **Search for the best driver in these locations**, and select the **Include this location in the search** check box. Next, click **Browse**, and find the driver at your installation path of Scan Utility (default is C:\Program Files\Argox\Scan Utility\driver\virtual com), and then click **Next**.
5. After the driver installed, click **Finish**.
6. Right-click **My Computer** and click **Properties**.
7. Click the **Hardware** tab, and click **Device Manager**.

8. Click **Ports (COM & LPT)**. Find **ARGOX Virtual COM** and see the port number in the parenthesis.
9. Close **Device Manager**.
10. Start Scan Utility. On the **File** menu, click **New**. In the **Select Model** list, click **AI-6820/AI-6820HD**, and click **OK**.
11. On the **Tool** menu, click **Host RS-232 Setup**.
12. In the **Host RS-232 Setup** dialog box, in the **RS-232 Setting** list, click the port you've seen in step 8, and click **Port Setting**.
13. In the **Port Setting** dialog box, in the **Baud rate** list, click **115200**, and click **OK**.

Note The installation steps may vary depending on your operating system.

4. Bar codes

This chapter provides the bar codes supported by AI-6820/AI-6820HD and their attributes.

Code 11

Length_min, Length_max

You can use these two attributes to specify the decoding length of a bar code. There are three modes.

- Both are zeros

  When both min length and max length are set to 0, the decoding length can be any number of characters.

- Max is larger than or equal to min

  When the max length is larger than the min length, the decoding length is between the max and the min. When the max is equal to the min, the decoding length is fixed (the number you assign to them).

- Min is larger than max

  When the min length is larger than the max length, the decoding length is either the min or the max.

C11_checkdigit_verify

Use an algorithm to calculate a check digit to verify the completeness of the bar code.

C11_checkdigit_transmit

Append the check digit to the end of a bar code.

Note You need to turn on **C11_checkdigit_verify** to use this feature.

(*) Default

Attributes	Option	Description	Bar Code
Code11_ enable	On	Turn on Code 11.	
Code11_ disable	*Off	Turn off Code 11.	
C11_length_ min	4	Default: 4	
C11_length_ max	55	Default: 55	
C11_ checkdigit_ verify	On	Turn on C11_checkdigit_verify.	

Attributes	Option	Description	Bar Code
C11_ checkdigit_ verify	*Off	Turn off C11_checkdigit_verify.	
C11_ checkdigit_ transmit	On	Turn on C11_checkdigit_transmit.	
C11_ checkdigit_ transmit	*Off	Turn off C11_checkdigit_transmit.	

Code 39

C39_FullASCII_conversion

Code 39 Full ASCII is a variant of Code 39. It allows the whole ASCII table (128 characters) to be encoded.

C39_length_min, C39_length_max

See the description in Code 11.

C39_checkdigit_verify

See the description in Code 11.

C39_checkdigit_transmit

See the description in Code 11.

Buffer_C39

It allows your scanner stores multiple Code 39 bar codes in the buffer. When it is turned on, it buffers all Code 39 bar codes having a leading space as a first character for later transmission. The leading space is not buffered. Decoding a Code 39 bar code with no leading space sends all buffered data in a first-in, first-out sequence, plus the “triggering” bar code.

Tcode39_enable

Trioptic Code 39 is a variant of Code 39. It consists of six data characters and two dollar signs ($) as the start and stop character. For example, the data “$Argox$” is read as “Argox.”

Note You can’t turn on Trioptic Code 39 and Code 39 Full ASCII simultaneously.

(*) Default

Attributes	Option	Description	Bar Code
C39_enable	*On	Turn on Code 39.	
C39_disable	Off	Turn off Code 39.	
C39_ FullASCII_ conversion	On	Turn on C39_FullASCII_conversion.	
C39_ FullASCII_ conversion	*Off	Turn off C39_FullASCII_conversion.	
C39_length_min	2	Default: 2	
C39_length_max	55	Default: 55	
C39_ checkdigit_ verify	On	Turn on C39_ checkdigit_ verify.	
C39_ checkdigit_ verify	*Off	Turn off C39_ checkdigit_ verify.	

Attributes	Option	Description	Bar Code
C39_ checkdigit_ transmit	On	Turn on C39_ checkdigit_ transmit.	
C39_ checkdigit_ transmit	*Off	Turn off C39_ checkdigit_ transmit.	
Buffer_C39	On	Turn on Buffer_C39.	
Buffer_C39	*Off	Turn off Buffer_C39.	
Tcode39_ enable	On	Turn on Tcode39_ enable.	
Tcode39_ disable	*Off	Turn off Tcode39_ disable.	

Italian Pharmacy (Code 32)

C32_Prefix

Add the character “A” at the beginning of a Code 32 bar code.

(*) Default

Attributes	Option	Description	Bar Code
Italian_ Pharmacy_ code_enable	On	Turn on Italian Pharmacy.	
Italian_ Pharmacy_ code_disable	*Off	Turn off Italian Pharmacy.	
C32_Prefix	On	Turn on Code 32 prefix.	
C32_Prefix	*Off	Turn off Code 32 prefix.	

Code 93

C93_length_min, C93_length_max

See the description in Code 11.

(*) Default

Attributes	Option	Description	Bar Code
Code93_ enable	On	Turn on Code 93.	
Code93_ disable	*Off	Turn off Code 93.	
C93_length_ min	4	Default: 4	
C93_length_ max	55	Default: 55	

Code 128

C128_length_min, C128_length_max

See the description in Code 11.

(*) Default

Attributes	Option	Description	Bar Code
Code128_ enable	*On	Turn on Code 128	
Code128_ disable	Off	Turn off Code 128	
C128_length_ min	01-99	Default: 0	
C128_length_ max	01-99	Default: 0	

ISBT 128

ISBT Concatenation

It links two ISBT bar codes.

- On

  There must be two ISBT bar codes for decoder to decode and concatenate them. The decoder won't decode the single ISBT bar code.

- Off

  The decoder won't concatenate ISBT bar codes.

- Autodiscriminate

  The decoder decodes and concatenates ISBT bar codes immediately. If there is only one ISBT bar code, the decoder needs to decode the bar code a few times to confirm that there is no additional ISBT bar code. You can set the number of decoding times using **ISBT Concatenation Redundancy**.

ISBT Concatenation Redundancy

The number of times that the decoder must decode an ISBT bar code to confirm that there is no additional bar code.

(*) Default

Attributes	Option	Description	Bar Code
ISBT128_ enable	*On	Turn on ISBT 128	
ISBT128_ disable	Off	Turn off ISBT 128	
ISBT Concatenation	On	Turn on ISBT Concatenation	
ISBT Concatenation	*Off	Turn off ISBT Concatenation	
ISBT Concatenation	Autodiscriminate	Repeat decoding a bar code to confirm there is no additional ISBT bar code.	
ISBT Concatenation Redundancy	00-99	Default: 10	

EAN-8

EAN8_Extend

Add five leading zeros to a decoded EAN-8 bar code to make it compatible with EAN-13 format.

(*) Default

Attributes	Option	Description	Bar Code
EAN8_ enable	*On	Turn on EAN-8.	
EAN8_ disable	Off	Turn off EAN-8.	
EAN8_ Extend	On	Turn on EAN-8 extension.	
EAN8_ Extend	*Off	Turn off EAN-8 extension.	

EAN-13

Bookland_ISBN

Bookland_ISBN has two modes.

- ISBN-10

  The decoder decodes both 10-digit and 13-digit ISBN format that starts with 978. It also decodes bar codes that start with 979 but won't identify it as an ISBN number.

- ISBN-13

  The decoder decodes ISBN codes that is 13-digit format and starts with either 978 or 979.

(*) Default

Attributes	Option	Description	Bar Code
EAN13_ enable	*On	Turn on EAN-13.	
EAN13_ disable	Off	Turn off EAN-13.	
Bookland_ EAN	*On	Turn on Bookland_ EAN.	
Bookland_ EAN	Off	Turn off Bookland_ EAN.	
Bookland_ ISBN	*ISBN-10	Decode ISBN-10 and ISBN-13.	
Bookland_ ISBN	ISBN-13	Decode ISBN-13.	

UCC-128/EAN-128 (GS1-128)

UCC_Coupon_Extended_Code

If you turn on this feature, you can decode the following bar codes:

- UPC-A starting with 5
- EAN-13 starting with 99
- UPC-A/GS1-128 coupon codes

You need to turn on UPCA, EAN-13 and UCC-128/EAN-128 to scan all types of coupon codes.

(*) Default

Attributes	Option	Description	Bar Code
UCCEAN128_enable	*On	Turn on UCC-128/ EAN 128.	
UCCEAN128_disable	Off	Turn off UCC-128/ EAN 128.	
UCC_ Coupon_ Extended_ Code	On	Turn on UCC coupon extended code.	
UCC_ Coupon_ Extended_ Code	*Off	Turn off UCC coupon extended code.	

UPC-A

UPCA_Preamble

The preamble character consists of a system number and a country code, which represent the type of the product and the country respectively.

- Off

  No preamble is used.

- System Character (<SYSTEM CHARACTER> <DATA>)

  Append the system character at the beginning of a bar code.

- System Character & Country Code (<COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)

  Append the country code and the system character at the beginning of a bar code.

UPCA_checkdigit_transmit

See the description in Code 11.

(*) Default

Attributes	Option	Description	Bar Code
UPCA_ enable	*On	Turn on UPC-A.	

Attributes	Option	Description	Bar Code
UPCA_ disable	Off	Turn off UPC-A.	
UPCA_ Preamble	Off	Turn off UPC-A preamble.	
UPCA_ Preamble	*System Character (<SYSTEM CHARACTER> <DATA>)	Show the system character at the beginning of a bar code.	
UPCA_ Preamble	System Character & Country Code (<COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)	Show the country code and the system character at the beginning of a bar code.	
UPCA_ checkdigit _transmit	*On	Turn on UPC-A checkdigit_transmit.	

Attributes	Option	Description	Bar Code
UPCA_ checkdigit _transmit	Off	Turn off UPC-A checkdigit_t ransmit.	

UPC-E

UPCE_Preamble

The preamble character consists of a system number and a country code, which represent the type of the product and the country respectively.

- Off

  No preamble is used.

- System Character (<SYSTEM CHARACTER> <DATA>)

  Append the system character at the beginning of a bar code.

- System Character & Country Code (<COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)

  Append the country code and the system character at the beginning of a bar code.

UPCE_checkdigit_transmit

See the description in Code 11.

UPC/EAN/JAN Supplementals

UPC, EAN and JAN might have supplementary bar codes to hold additional information. Supplemental bar codes appear to the right of the primary bar codes and are usually shorter than the primary ones.

- Ignore UPC/EAN/JAN with Supplementals

  The decoder decodes the primary bar code of UPC/EAN/JAN and ignores the supplemental part.

- Decode UPC/EAN/JAN with Supplementals

  The decoder only decodes the bar code with the supplemental. Bar codes without supplements will be ignored.

- Autodiscriminate UPC/EAN/JAN with Supplementals

  The decoder decodes UPC/EAN/JAN bar codes with supplementals immediately. If the bar code doesn't have a supplemental, the decoder needs to decode it a few times to confirm that there is no supplemental. You can set the number of decoding times in **UPC/EAN/JAN Supplemental Redundancy**.

- Supplemental Mode
  Select one of the following modes to decode your bar codes.

378/379 Supplemental Mode
978/979 Supplemental Mode

If you select this mode to scan ISBN bar codes, you need to turn on **Bookland_EAN**, and select an ISBN format using **Bookland_ISBN**.

414/419/434/439 Supplemental Mode
977 Supplemental Mode
491 Supplemental Mode

UPC/EAN/JAN Supplemental Redundancy

The number of times that the decoder must decode a UPC/EAN/JAN bar code to confirm that there is no supplemental. Five or more times is recommended when decoding a combination of UPC/EAN/JAN bar code with or without supplemental.

Convert UPC-E to UPC-A

Convert decoded UPC-E bar code to the UPC-A format before sending data. After conversion, the data is affected by the attributes you select in **UPC-A**.

(*) Default

Attributes	Option	Description	Bar Code
UPCE_ enable	*On	Turn on UPC-E.	

Attributes	Option	Description	Bar Code
UPCE_ disable	Off	Turn off UPC-E.	
UPCE_ Preamble	Off	Turn off UPCE_Preamble.	
UPCE_ Preamble	*System Character (<SYSTEM CHARACTER> <DATA>)	Show the system character at the beginning of a bar code.	
UPCE_ Preamble	System Character & Country Code (<COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)	Show the country code and the system character at the beginning of a bar code.	
UPCE_ checkdigit_ transmit	*On	Turn on UPCE_checkdigit_transmit.	

Attributes	Option	Description	Bar Code
UPCE_ checkdigit _ transmit	Off	Turn off UPCE_checkdigit_transmit.	
UPC/EAN/ JAN Supplemental	Ignore UPC/EAN/ JAN with Supplementals	Ignore the supplemental part.	
UPC/EAN/ JAN Supplemental	Decode UPC/EAN/ JAN Only With Supplementals	Decode the bar code only with supplementals.	
UPC/EAN/ JAN Supplemental	Autodiscriminate UPC/EAN/ JAN Supplementals	Repeat decoding a bar code to confirm there is no supplementals.	
UPC/EAN/ JAN Supplemental	Smart Supplemental Mode	Turn on smart supplemental mode.	
UPC/EAN/ JAN Supplemental	378/379 Supplemental Mode	Turn on 378/379 supplemental mode.	

Attributes	Option	Description	Bar Code
UPC/EAN/JAN Supplemental	978/979 Supplemental Mode	Turn on 978/979 supplemental mode.	
UPC/EAN/JAN Supplemental	414/419/434/439 Supplemental Mode	Turn on 414/419/434/439 supplemental mode.	
UPC/EAN/JAN Supplemental	977 Supplemental Mode	Turn on 977 supplemental mode.	
UPC/EAN/JAN Supplemental	491 Supplemental Mode	Turn on 491 supplemental mode.	
UPC/EAN/JAN Supplemental Redundancy	00-99	Default: 10	
Convert UPC-E to UPC-A	On	Convert UPC-E to UPC-A.	
Convert UPC-E to UPC-A	*Off	Do not convert UPC-E to UPC-A.	

UPC-E1

UPCE1_Preamble

See the description in UPC-E.

UPCE1_checkdigit_transmit

See the description in Code 11.

Convert UPC-E1 to UPCA

Convert decoded UPC-E1 bar code to the UPC-A format before sending data. After conversion, the data is affected by attributes you select in **UPC-A**.

(*) Default

Attributes	Option	Description	Bar Code
UPCE1_enable	On	Turn on UPC-E1	
UPCE1_disable	*Off	Turn off UPC-E1	
UPCE1_ Preamble	Off	Turn off UPCE1_ Preamble	
UPCE1_ Preamble	System Character (<SYSTEM CHARACTER>	Show the system character at the beginning of a bar code.	

Attributes	Option	Description	Bar Code
	<DATA>)		
UPCE1_ Preamble	System Character & Country Code (<COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)	Show the country code and the system character at the beginning of a bar code.	
UPCE1_ checkdigit_ transmit	*On	Turn on UPCE1_checkdigit_transmit	
UPCE1_ checkdigit_ transmit	Off	Turn off checkdigit_transmit	
Convert UPC-E1 to UPCA	On	Convert UPC-E1 to UPC-A	

Attributes	Option	Description	Bar Code
Convert UPC-E1 to UPCA	*Off	Do not convert UPC-E1 to UPC-A.	

Discrete 2 of 5 (DTF)

D25_length_min, D25_length_max

See the description in Code 11.

(*) Default

Attributes	Option	Description	Bar Code
D25_enable	On	Turn on Discrete 2 of 5.	
D25_disable	*Off	Turn off Discrete 2 of 5.	
D25_length_min	01-99	Default: 12	
D25_length_max	01-99	Default: 0	

Interleaved 2 of 5 (I25)

I25_length_min, I25_length_max

See the description in Code 11.

I25_checkdigit_verify

See the description in Code 11.

I25_checkdigit_transmit

See the description in Code 11.

Convert I25 to EAN-13

Convert 14-character Interleaved 2 of 5 bar codes (I25) to the EAN-13 format before sending data. After conversion, the data is affected by attributes you select in **EAN-13**.

To convert the code, you need to turn on I25, and the code must have a leading zero and a valid EAN-13 check digit.

(*) Default

Attributes	Option	Description	Bar Code
I25_enable	*On	Turn on Interleaved 2 of 5.	
I25_disable	Off	Turn off Interleaved 2 of 5.	
I25_length_min	01-99	Default: 14	

Attributes	Option	Description	Bar Code
I25_length_max	01-99	Default: 0	
I25_checkdigit_verify	On	Turn on I25_checkdigit_verify.	
I25_checkdigit_verify	*Off	Turn off I25_checkdigit_verify.	
I25_checkdigit_transmit	On	Turn on I25_checkdigit_transmit.	
I25_checkdigit_transmit	*Off	Turn off I25_checkdigit_transmit.	
Convert I25 to EAN-13	On	Convert I25 to EAN-13.	
Convert I25 to EAN-13	*Off	Do not convert I25 to EAN-13.	

MSI

MSI_length_min, MSI_length_max

See the description in Code 11.

MSI_checkdigit_verify

See the description in Code 11.

MSI_checkdigit_algorithm

You can choose one of two algorithms to calculate the check digit of a MSI bar code. If you choose MOD 10/MOD 11, the system uses MOD 10 to calculate the check digit and append it to the bar code. The new bar code with the MOD 10 check digit will be calculated again using MOD 11, and then the system appends the MOD 11 check digit to the new bar code. The result of the bar code format is:
<DATA><MOD 10 check digit><MOD 11 check digit>

MSI_checkdigit_transmit

See the description in Code 11.

(*) Default

Attributes	Option	Description	Bar Code
MSI_enable	On	Turn on MSI.	

Attributes	Option	Description	Bar Code
MSI_disable	*Off	Turn off MSI.	
MSI_length_min	4	Default: 4	
MSI_length_max	55	Default: 55	
MSI_checkdigit_verify	0	one check digit is verified	
MSI_checkdigit_verify	*1	Two check digits is verified	
MSI_checkdigit_algorithm	MOD 10/ MOD 11	Use Modulo 10/Modulo 11 to calculate the check digit.	
MSI_checkdigit_algorithm	*MOD 10/ MOD 10	Use Modulo 10/Modulo 10 to calculate the check digit.	

Attributes	Option	Description	Bar Code
MSI_ checkdigit_ transmit	On	Turn on MSI_checkd igit_transmit .	
MSI_ checkdigit_ transmit	*Off	Turn off MSI_checkd igit_transmit .	

Codabar

CLSI_length_min, CLSI_length_max

See the description in Code 11.

CLSI_Editing

It removes the start and the stop characters, and inserts a space after the first, fifth and tenth character of a 14-character Codabar bar code.

NOTIS_Editing

It removes the start and the stop characters from a decoded Codabar bar code.

Upper or Lower Case Start/Stop Characters Detection

Detect uppercase or lowercase Codabar start or stop characters.

(*) Default

Attributes	Option	Description	Bar Code
Codabar_ enable	On	Turn on Codebar.	
Codabar_ disable	*Off	Turn off Codebar.	
Codabar_ length_min	5	Default: 5	

Attributes	Option	Description	Bar Code
Codabar_ length_max	55	Default: 55	
CLSI_Editing	On	Turn on CLSI_Editing	
CLSI_Editing	*Off	Turn off CLSI_Editing	
NOTIS_ Editing	On	Turn on NOTIS_Editing	
NOTIS_ Editing	*Off	Turn off NOTIS_Editing	
Upper or Lower Case Start/Stop Characters Detection	*Upper	Detect upper case Codabar start/stop characters.	
Upper or Lower Case Start/Stop Characters Detection	Lower	Detect lower case Codabar start/stop characters.	

Chinese 2 of 5

(*) Default

Attributes	Option	Description	Bar Code
Chinese2of5 _enable	On	Turn on Chinese 2 of 5.	
Chinese2of5 _disable	*Off	Turn off Chinese 2 of 5.	

Korean 3 of 5

(*) Default

Attributes	Option	Description	Bar Code
Korean3of5 _ enable	On	Turn on Korean 3 of 5.	
Korean3of5 _ disable	*Off	Turn off Korean 3 of 5.	

Inverse 1D

Regular

Decode regular 1D bar codes only.

Inverse Only

Decode inverse 1D bar codes only.

Auto Detect

Decode both regular and inverse 1D bar codes.

(*) Default

Attributes	Description	Bar Code
*Regular	Decode regular 1D bar codes only.	
Inverse Only	Decode inverse 1D bar codes only.	
Auto Detect	Decode both regular and inverse 1D bar codes.	

US Postnet

US_Postnet_checkdigit_transmit

See the description in Code 11.

(*) Default

Attributes	Option	Description	Bar Code
US_Postnet_enable	On	Turn on US Postnet.	
US_Postnet_disable	*Off	Turn off US Postnet.	
US_Postnet_checkdigit_transmit	*On	Turn on US_Postnet_checkdigit_transmit.	
US_Postnet_checkdigit_transmit	Off	Turn off US_Postnet_checkdigit_transmit.	

US Planet

(*) Default

Attributes	Option	Description	Bar Code
US_Planet_ enable	On	Turn on US Planet.	
US_Planet_ disable	*Off	Turn off US Planet.	

USPS 4CB / One Code / Intelligent Mail

(*) Default

Attributes	Option	Description	Bar Code
USPS_4C B_enable	On	Turn on USPS 4CB.	
USPS_4C B_disable	*Off	Turn off USPS 4CB.	

UPU FICS Postal

(*) Default

Attributes	Option	Description	Bar Code
UPU_FICS_Postal_enable	On	Turn on UPU FICS Postal.	
UPU_FICS_Postal_disable	*Off	Turn off UPU FICS Postal.	

UK Postal

UK_Postnet_checkdigit_transmit

See the description in Code 11.

(*) Default

Attributes	Option	Description	Bar Code
UK_Postal_enable	On	Turn on UK Postal.	
UK_Postal_disable	*Off	Turn off UK Postal.	
UK_Postal_checkdigit_transmit	*On	Turn on UK_Postal_checkdigit_transmit.	

Attributes	Option	Description	Bar Code
UK_Postal_checkdigit_transmit	Off	Turn off UK_Postal_checkdigit_transmit.	

JAP Postal

(*) Default

Attributes	Option	Description	Bar Code
JAP_Postal _enable	On	Turn on JAP Postal.	
JAP_Postal _disable	*Off	Turn off JAP Postal.	

Australia Postal

(*) Default

Attributes	Option	Description	Bar Code
Australia_ Postal_ enable	On	Turn on Australia Postal.	
Australia_ Postal_ disable	*Off	Turn off Australia Postal.	

Netherlands KIX Code

(*) Default

Attributes	Option	Description	Bar Code
Netherlands _KIX_Code	On	Turn on Netherlands KIX code.	
Netherlands _KIX_Code	*Off	Turn off Netherlands KIX code.	

PDF417

(*) Default

Attributes	Option	Description	Bar Code
PDF417_ enable	*On	Turn on PDF417.	
PDF417_ disable	Off	Turn off PDF417.	

Micro PDF417

C128_Emulation

It sends certain Micro PDF417 as Code 128. You need to turn on **AIM Symbology ID** for this attribute to work. Linked Micro PDF417 codes start with 906, 907, 912, 914 and 915 are not supported. Use GS1 Composites instead.

When you turn on C128_Emulation, the AIM symbology ID of the Micro PDF417 bar code is:

The beginning number of the Micro PDF417 code	The AIM Symbology ID
903-905	]C1
908-909	]C2
910-911	]C0

When you turn off C128_Emulation, the AIM symbology ID of the Micro PDF417 bar codes is:

The beginning number of the Micro PDF417 code	The AIM Symbology ID
903-905	]L3
908-909	]L4
910-911	]L5

(*) Default

Attributes	Option	Description	Bar Code
MicroPDF417_enable	On	Turn on Micro PDF417.	
MicroPDF417_disable	*Off	Turn off Micro PDF417.	
C128_Emulation	On	Turn on C128_Emulation.	
C128_Emulation	*Off	Turn off C128_Emulation.	

Micro QR

(*) Default

Attributes	Option	Description	Bar Code
MicroQR_ enable	*On	Turn on MicroQR	
MicroQR_ disable	Off	Turn off MicroQR	

QR Code

QR_Inverse

- Regular

  Decode regular QR codes only.

- Inverse Only

  Decode inverse QR codes only.

- Auto Detect

  Decode both regular and inverse QR codes.

(*) Default

Attributes	Option	Description	Bar Code
QR_Code _enable	*On	Turn on QR code.	
QR_Code _disable	Off	Turn off QR code.	
QR_ Inverse	*Regular	Decode regular QR codes only.	
QR_ Inverse	Inverse Only	Decode inverse QR codes only.	
QR_ Inverse	Auto Detect	Decode both regular and inverse QR codes.	

MaxiCode

(*) Default

Attributes	Option	Description	Bar Code
Maxicode_ enable	On	Turn on MaxiCode.	

Attributes	Option	Description	Bar Code
Maxicode_ disable	*Off	Turn off MaxiCode.	

GS1 Databar

Convert_GS1_DataBar_to_UPCEAN

This attribute only affects GS1 DataBar and GS1 DataBar Limited bar codes not decoded as part of a composite bar code. It removes the leading "010" from DataBar and DataBar Limited bar codes that encode a single zero as the first digit, and sends the bar code as EAN-13.

For bar codes starting with two or more zeros but not six zeros, it removes the leading "0100" and send the bar code as UPC-A. After conversion, the data is affected by the **UPCA_Preamble** attribute. Neither the system character nor the check digit can be removed.

(*) Default

Attributes	Option	Description	Bar Code
GS1_ Databar_ enable	*On	Turn on GS1 Databar.	

Attributes	Option	Description	Bar Code
GS1_ Databar_ disable	Off	Turn off GS1 Databar.	
GS1_ Databar_ Limited	On	Turn on GS1 Databar Limited.	
GS1_ Databar_ Limited	*Off	Turn off GS1 Databar Limited.	
GS1_ Databar_ Expanded	*On	Turn on GS1 Databar Expended.	
GS1_ Databar_ Expanded	Off	Turn off GS1 Databar Expended.	
Convert_ GS1_ DataBar_ to_ UPCEAN	On	Convert GS1 Databar to UPC/EAN.	
Convert_ GS1_ DataBar_ to_ UPCEAN	*Off	Do not convert GS1 Databar to UPC/EAN/	

Composite

UPC_Composite_Mode

It links a UPC bar code and a 2D bar code. If you turn on Composite CC-A/B, you need to decide how these bar codes are linked.

- Never Linked

  Send the UPC bar code with or without the 2D portion.

- Always Linked

  Send the UPC bar code and the 2D portion. If the 2D portion is not detected, the UPC bar code won't be sent.

- Autodiscriminate UPC Composites

  The decoder determines if there is a 2D portion, and sends the UPC bar code as well as the 2D portion (if present).

(*) Default

Attributes	Option	Description	Bar Code
Composite_ CC/C	On	Turn on Composite_ CC/C.	
Composite_ CC/C	*Off	Turn off Composite_ CC/C.	
Composite_ CC-A/B	On	Turn on Composite_ CCA/B.	
Composite_ CC-A/B	*Off	Turn off Composite_ CCA/B.	
GS128_Emulation_ for_UCCEANComposite	On	Turn on GS128 emulation for UCC/EAN Composite.	
GS128_Emulation_ for_UCCEANComposite	*Off	Turn off GS128 emulation for UCC/EAN Composite.	
Composite_TLC39_enable	On	Turn on Composite TLC39.	

Attributes	Option	Description	Bar Code
Composite_TLC39_disable	*Off	Turn off Composite TLC39.	
UPC_Composite_Mode	Never Linked	Send the UPC with or without the 2D portion.	
UPC_Composite_Mode	*Always Linked	Send the UPC with the 2D portion only.	
UPC_Composite_Mode	Autodiscriminate UPC Composites	Send the UPC and the 2D portion (if present)	

Aztec

Aztec_Inverse

- Regular
  Decode regular Aztec bar codes only.
- Inverse Only
  Decode inverse Aztec codes only.
- Auto Detect
  Decode both regular and inverse Aztec codes.

(*) Default

Attributes	Option	Description	Bar Code
Aztec_enable	*On	Turn on Aztec.	
Aztec_disable	Off	Turn off Aztec.	
Aztec_Inverse	Regular	Decode regular Aztec bar codes only.	
Aztec_Inverse	Inverse Only	Decode inverse Aztec bar codes only.	
Aztec_Inverse	*Auto Detect	Decode both regular and inverse Aztec bar codes.	

Data Matrix

Data_Matrix_Decode

- Regular

  Decode regular Data Matrix bar codes only.

- Auto Detect

  Decode both regular and inverse Data Matrix codes.

(*) Default

Attributes	Option	Description	Bar Code
DataMatrix_ enable	*On	Turn on Data Matrix.	
DataMatrix_ disable	Off	Turn off Data Matrix.	
Data_Matrix _Decode	*Regular	Decode regular Data Matrix bar codes only.	
Data_Matrix _Decode	Auto Detect	Decode both regular and inverse Data Matrix bar codes.	

OCR(Optical character recognition)

There are 4 fonts, OCR-A, OCR-B, MICR E13B and US Currency Serial Number, can be decoded. Turn on one font decode function will closed other font decode functions automatically to ensure recognition accuracy.

OCR-A

OCR_length_min, OCR_length_max

See the description in Code 11.

(*) Default

Attributes	Option	Description	Bar Code
OCR-A_enable	On	Turn on OCR-A.	
OCR-A _disable	*Off	Turn off OCR-A.	
OCR_length_min	3	Default: 3	
OCR_length_max	100	Default: 100	

(*) Default

Attributes	Option	Description	Bar Code
OCR-A_ Full ASCII	*On	Decode Full ASCII.	
OCR-A_Banking	On	Decode OCR-A_Banking only.	

OCR-B

OCR_length_min, OCR_length_max

See the description in Code 11.

(*) Default

Attributes	Option	Description	Bar Code
OCR-B_enable	On	Turn on OCR-B.	
OCR-B_disable	*Off	Turn off OCR-B.	
OCR_length_min	3	Default: 3	

Attributes	Option	Description	Bar Code
OCR_length_max	100	Default: 100	

(*) Default

Attributes	Option	Description	Bar Code
OCR-B Full ASCII	*On	Decode OCR-B_Full ASCII.	
OCR-B Banking	On	Decode OCR-B_Banking only.	
OCR-B Limited	On	Decode OCR-B Limited only.	
ISBN 10-digit book number	On	Decode OCR-B ISBN 10-digit book number only.	
ISBN 13-digit book number	On	Decode OCR-B ISBN 13-digit book number only.	
Travel Document Version 1 3-Lines ID	On	Decode OCR-B Travel Document Version 1	

Attributes	Option	Description	Bar Code
cards		3-Lines ID cards only.	
Travel Document Version 2 2-Lines ID cards	On	Decode OCR-B Travel Document Version 2 2-Lines ID cards only.	
Passport	On	Decode Passport only.	
Visa Type A	On	Decode Visa Type A only.	
Visa Type B	On	Decode Visa Type B only.	

MICR E13B

OCR_length_min, OCR_length_max

See the description in Code 11.

Attributes	Option	Description	Bar Code
MICR E13B _enable	On	Turn on MICR E13B.	
MICR E13B _disable	*Off	Turn off MICR E13B.	
OCR_length_ min	3	Default: 3	
OCR_length_ max	100	Default: 100	

US Currency Serial Number

OCR_length_min, OCR_length_max

See the description in Code 11.

Attributes	Option	Description	Bar Code
US Currency Serial Number _enable	On	Turn on US Currency Serial Number only.	
US Currency Serial Number _disable	*Off	Turn off US Currency Serial Number only.	
OCR_length _min	3	Default: 3	
OCR_length _max	100	Default: 100	

4 Troubleshooting

You might encounter some issues when you scan bar codes. This chapter provides information that helps you fix common issues.

4.1 Scanner issues

My scanner doesn’t emit the aiming pattern.

Recommend check

- Did you turn off the aiming pattern?
- Check your USB cable and power supply by connecting them to other compatible devices and test if they work properly. If not, replace them

4.2 Bar code issues

My scanner doesn’t read a bar code properly.

- Reset your scanner.
- Check the quality of your bar codes. Wrinkled, smudged or torn bar codes won’t be read by your scanner.
- Are your bar codes too close to each other? Cover the bar codes you don’t need and scan the target again.

The data isn’t sent to my computer.

Recommend check

- Make sure the USB cable is tightly plugged into your computer.

5 Specifications

PERFORMANCE CHARACTERISTICS		
Model	AI-6820	AI-6820HD
Light Source	Aiming Pattern: 655 +/- 10 nm laser diode Illumination: 625 +/- 5 nm LED	
Field of View	39.6º Horizontal, 25.7º Vertical	
Roll/Pitch/ Skew	360°, ±60°, ±60°	

PHYSICAL CHARACTERISTICS		
Dimensions	9.4 x 7.6 x 15.8 cm	
Weight	138g	
Indicator	LED, Beeper, Vibration	
Resolution	752 H x 480 V pixels 1D (4 mils): Code 39 2D (6.7 mils): PDF417	1D (3mils): Code 39 2D (4mils): PDF417

ACCESSORIES	
Power Supply	Power Supply (for RS-232)

SYMBOLOGY DECODE CAPABILITY	
1-D Symbologies	UPC/EAN/UPCA/UPCE/UPCE1/EAN-8/EAN-13/JAN-8/JAN13 plus supplementals, ISBN (Bookland), ISSN, Coupon Code, Code39

SYMBOLOGY DECODE CAPABILITY	
	(Standard, Full ASCII, UCC/EAN-128, ISBT-128 Concatenated), Code 93, Codabar/NW7, Code 11 (standard, Matrix 2 of 5), MSI Plessey, I2 of 5 (Interleaved 2 of 5/ITF, Discrete 2 of 5 IATA, Chinese 2 of 5), GS1 Databar (Omnidirectional, Truncated,Stacked, Stacked Omnidirectional, Limited, Expanded, Expanded Stacked, Inverse), Base 32 (Italian Pharmacy)
PDF417 (and Variants)	PDF417, Micro PDF417, Composite Codes (CC-A, CC-B, CC-C/CC-B, CC-C)
2-D Symbologies	TLC-39, Aztec (Standard, Inverse), MaxiCode, DataMatrix/ECC 200 (Standard, Inverse), QR Code (Standard, Inverse and Micro)
Print Contrast	25% minimum reflectance
Interface Supported	RS-232, USB, Virtual Com
Depth of Field	15 mil Data Matrix: Max 12.4” 100% UPC: 1.6–15.5”

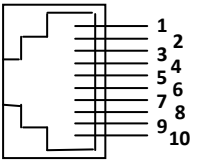
USER ENVIRONMENT	
Operating Temperature	-20℃ to 55℃ (-4℉ to 131℉)
Storage	-20℃ to 70℃ (-4℉ to 158℉)

Temperature	
Humidity	5% to 95% related humidity, non-condensing
Drop Specifications	Withstands multiple 6 ft./1.8 m drops to concrete
Contaminants	Seals to resist airborne particulate contaminants (IP65)
Ambient Light Immunity	Up to 100,000 LUX, immune to normal artificial indoor and natural outdoor (direct sunlight) lighting

REGULATORY	
Electrical Safety	EN60950-1, CNS14336
Laser Safety	EN60825-1:1994 +A1: 2002 +A2 2001, IEC60825-1, 21CFR1040.10 and 21CFR1040.11, CDRH Class II, IEC Class 2
EMI/RFI	CE, FCC, BSMI, NCC
Environmental	Compliant with RoHS directive 2002/95/EEC

ELECTRICAL CHARACTERISTICS	
Power Input	5V ± 10% VDC / 1A

5.1 Pin Assignments



10 pin

10-pin RJ45 Connector

Pin	RS-232	USB
1	NC	NC
2	VCC (+5V)	VCC (+5V)
3	TXD	NA
4	NA	USB_D+
5	NA	USB_D-
6	CTS	NA
7	RX	NA
8	RTS	NA
9	GND	GND
10	GND	GND

Appendix A. Test symbologies

Bar codes marked with asterisk (*) are turned on initially.

CODABAR PARA

CODE 11 PARA

CODE 128 PARA*

CODE 39 PARA*

CODE 93 PARA

EAN-13 PARA*

PDF417*

EAN-8 PARA*

UPC-E PARA*

INTERLEAVED 2 of 5 PARA

MSI/PLESSEY PARA

UPC-A PARA*

GS1*

Micro PDF

GS1-128

Appendix B. ASCII table

L \ H	0	1	0	1
0	Null		NUL	DLE
1	Up	F1	SOH	DC1
2	Down	F2	STX	DC2
3	Left	F3	ETX	DC3
4	Right	F4	EOT	DC4
5	PgUp	F5	ENQ	NAK
6	PgDn	F6	ACK	SYN
7		F7	BEL	ETB
8	Bs	F8	BS	CAN
9	Tab	F9	HT	EM
A		F10	LF	SUB
B	Home	Esc	VT	ESC
C	End	F11	FF	FS
D	Enter	F12	CR	GS
E	Insert	Ctrl+	SO	RS
F	Delete	Alt+	SI	US

L \ H	2	3	4	5	6	7
0	SP	0	@	P	`	p
1	!	1	A	Q	a	q
2	“	2	B	R	b	r
3	#	3	C	S	c	s
4	$	4	D	T	d	t
5	%	5	E	U	e	u
6	&	6	F	V	f	v
7	‘	7	G	W	g	w
8	(	8	H	X	h	x
9	)	9	I	Y	i	y
A	★	:	J	Z	j	z
B	+	;	K	[	k	{
C	,	<	L	\	l	|
D	-	=	M	]	m	}
E	.	>	N	^	n	~
F	/	?	O	_	o	DEL

Appendix C. Default settings of bar codes

V: Enabled -: Unsupported Space: Disabled

Code Type	Read Enable	Checksum Verification Enable	Checksum Transmission Enable
Code 11			
Code 39	V		
Italian Pharmacy (Code 32)			
Code 93		-	-
Code 128	V	-	-
ISBT 128	V	-	-
EAN-8	V	-	-
EAN-13	V	-	-
UCC-128/EAN-128 (GS1-128)	V	-	-
UPC-A	V		V
UPC-E	V		V
UPC-E1			V
Discrete 2 of 5 (DTF)		-	-
Interleaved 2 of 5 (I25)			
MSI			
Codabar		-	-
Chinese 2 of 5		-	-
Korean 3 of 5		-	-
Inverse 1D	V		
US Postnet			V
US Planet			
USPS 4CB / One Code / Intelligent Mail		-	-

Code Type	Read Enable	Checksum Verification Enable	Checksum Transmission Enable
UPU FICS Postal		-	-
UK Postal			V
JAP Postal		-	-
Australia Postal		-	-
Netherlands KIX Code		-	-
PDF417	V	-	-
Micro PDF417		-	-
Micro QR	V	-	-
QR Code	V	-	-
MaxiCode		-	-
GS1 Databar	V	-	-
Composite		-	-
Aztec	V	-	-
Data Matrix	V	-	-

Appendix D. Data entry bar codes


1


2


3


4


5


6


7


8


9


0


A


B


C


D


E


F


Save


Cancel